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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,800	05/12/2006	Jiming Li	0815-053671	7396
28289 7590 06/06/2008 THE WEBB LAW FIRM, P.C. 700 KOPPERS BUILDING 436 SEVENTH AVENUE PITTSBURGH, PA 15219				
EXAMINER				
PATEL, VISHAL A				
ART UNIT		PAPER NUMBER		
3676				
MAIL DATE		DELIVERY MODE		
06/06/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/560,800

**Applicant(s)**

LI ET AL.

**Examiner**

Vishal Patel

**Art Unit**

3676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 May 2008 and 15 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

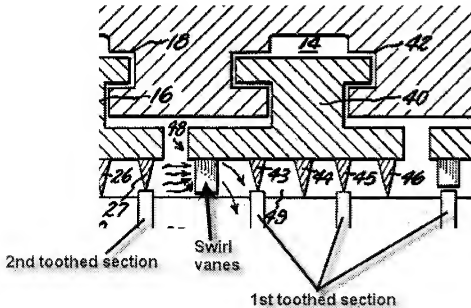
1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/13/08 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (US. 4,420,161) in view of Burnett et al (US. 6,679,681).  
Miller discloses an apparatus having a labyrinth seal having a seal section (section having 43-46) on a stator and swirl vanes (e.g. 37 shown below) on the stator, a shaft (e.g. 10) comprising a first toothed section and a second toothed section, a cylindrical surface (surface between 32 and 50, 32 is part of the second toothed section and 50 is part of the first toothed section) of a diameter less than the outer edge of the teeth of the toothed sections and the seal section having teeth (43-46).



Miller discloses the invention as claimed above but fails to disclose that the apparatus having an abradable labyrinth seal having an abradable coating on the stator. Burnett discloses a labyrinth seal (figure 9) having toothed sections (e.g. toothed section having 652 and toothed section having 644) on two members that are relatively rotating (figures 9) and at the same time in another embodiment provides a labyrinth seal (figure 8) having toothed section (section having 548) on a member (e.g. 510) and an abradable seal having an abradable coating (e.g. 550) on another member (e.g. 526). It would have been obvious to one having ordinary skilled in the art at the time of the invention to have the seal section of Miller to have an abradable coating instead of teeth as taught by Burnett, to provide seal with reduce solid particle erosion (column 4, lines 52-53 of Burnett) and having toothed section or an abradable is art equivalent.

4. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller and Burnett and further in view of Jude (US. 881,474).

Miller and Burnett disclose the invention substantially as claimed above but fail to disclose that the vanes having a generally V-shape with a generally V-shape slot therebetween, the apex of the slot being circumferentially pointed in the direction of shaft rotation whereby the axial gas flow swirling in the rotational direction of the shaft enters the slots and is redirected to exit swirling in the direction against the rotation of the shaft, the vanes having an arcuate shape and the top of the arc is pointed in the direction of the rotation of the shaft and the vanes have a tapered ends. Jude discloses to have vanes that have a generally V-shape with a generally V-shape slot therebetween, the apex of the slot being circumferentially pointed in the direction of shaft rotation whereby the axial gas flow swirling in the rotational direction of the shaft enters the slots and is redirected to exit swirling in the direction against the rotation of the shaft, the vanes having an arcuate shape and the top of the arc is pointed in the direction of the rotation of the shaft and the vanes have a tapered ends (figures 1-4, e.g. vanes a or a' or b or b'). It would have been obvious to one having ordinary skilled in the art at the time of the invention to have the swirl vanes of Miller and Burnett to have V-shape and as oriented as shaft rotation, to provide more efficient sealing apparatus with low loss of working fluid (page 1, lines 89-94 of Jude).

***Response to Arguments***

5. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is 571-272-7060. The examiner can normally be reached on 6:30am to 8:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer H. Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. P./  
Primary Examiner, Art Unit 3676

/Vishal Patel/  
Primary Examiner, Art Unit 3676